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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/763,597	07/02/2001	Charles Love	440431	9284

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EXAMINER

MENON, KRISHNAN S

ART UNIT PAPER NUMBER

1723

DATE MAILED: 02/16/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/763,597

Applicant(s)

LOVE ET AL.

Examiner

Krishnan S. Menon

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 10 August 2005.  
2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1 and 14-31 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 1 and 14-31 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.  
10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_.  
5) ☐ Notice of Informal Patent Application (PTO-152)  
6) ☐ Other: \_\_\_\_\_.

### DETAILED ACTION

Claims 1 and 14-31 are pending as amended 8/10/05

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 1, 17-21 and 23-31 rejected under 35 U.S.C. 103(a) as being unpatentable over Takahar et al (US 5,147,917) in view of Inoue (US 4,414,028).

Takahar teaches a method of forming a porous medium comprising applying pressure to the medium precursor including inorganic particles and then sinter bonding the particles together to form the porous medium having porosity 50% or more (abstract; examples).

Takahar differs from the claims in the details of the molding process recited. Inoue teaches all those details, such as applying pressure to a first portion and applying pressure separately to a second portion in the molding process (see figures 1, 3 and 6; column 8 lines 16-33), applying pressure in both directions simultaneously, or one after another, medium precursor remaining in the cavity until after the application of pressure, dies moving on a common axis in the opposite direction (dies moving in x-x' direction in figure 6 for example), terminating the axial displacement at the same time, etc. The teaching of the reference is good for many different materials such as metals, ceramic,

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etc., and for making different shapes (see column 2 lines 4-11). It would be obvious to one of ordinary skill in the art at the time of invention to use the teaching of Inoue in the teaching of Takahar because Takahar does not teach the details of molding and sintering, and Inoue teaches the advantages as cited in the column 1 line 37 – column 2 line 16, such as product quality, versatility of the method, etc.

2. Claims 1 and 14-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takahar et al (US 5,147,917) in view of Ohta et al (US 5,198,167).

Claim 1: Takahar teaches a method of forming a porous medium comprising applying pressure to the medium precursor including inorganic particles and then sinter bonding the particles together to form the porous medium having porosity 50% or more (abstract; examples).

Takahar does not teach applying pressure to a first portion and applying pressure separately to a second portion in the molding process. Ohta teaches applying pressure to a first portion and separately applying pressure along a common axis to a second portion in a molding process as claimed in col 13 line 56 – col 14 line 27 and figure 18A-C (64(1) and 64(2) are dies with common axis; first and second portions of the mold can be at opposite ends). It would be obvious to one of ordinary skill in the art at the time of invention to use the teaching of Ohta in the teaching of Takahar for the molding process because Takahar does not teach the specifics of the molding process and suggests optimizing the molding process to suit the needs (see col 3 lines 45-62), and to obtain

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uniformity, proper filling of the mold, avoiding large voids, proper orientation of the particles, etc., as taught by Ohta.

Claims 14-16: first die and second die are taught by Ohta, and they impart predetermined characteristics to respective portions – see the referenced paragraphs. Same compression ratios and same particle density are also obtained: referenced paragraphs; and also optimization as suggested by Takahar in examples.

3. Claims 1, 14-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takahar in view of Munk (US 3,809,736).

Claim 1: Takahar teaches a method of forming a porous medium comprising applying pressure to the medium precursor including inorganic particles and then sinter bonding the particles together to form the porous medium having porosity 50% or more (abstract; examples).

Takahar differs from the claims in the details of the molding process recited. Munk teaches all those details, such as applying pressure to a first portion and applying pressure separately to a second portion in the molding process in common axis in opposite direction (direction x, figure 1) or same direction (figure 2: dies 4 and 6), applying pressure in both directions simultaneously, or one after another, medium precursor remaining in the cavity until after the application of pressure, dies moving on a common axis in the opposite direction (see figures: the two dies in the x-direction in figure 1 are independent of each-other), terminating the axial displacement at the same time, etc. It would be obvious to one of ordinary skill in the art at the time of invention to

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use the teaching of Munk in the teaching of Takahar because Takahar does not teach the details of molding and sintering, and Munk teaches the process for the specific shape, and also the advantages as cited in column 2 lines 60-70, such as consistency and compression ratio.

### ***Response to Arguments***

Applicant's arguments filed 8/10/05 have been fully considered but they are not persuasive.

In response to the argument that Ohta uses the primary and secondary pressing forces only to orient the fibers is not correct. Ohta also teaches that the secondary forces from the dies 64(1) and 64(2) can be used as back-pressure to load the material in the die. See column 14 lines 61-67. The back-pressure also would help avoid large voids – see column 14 lines 55-60. In addition, it may be noted that Ohta provides an apparatus for the molding process. The use of the apparatus is not limited by the specific material Ohta processes. The test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981). One of ordinary skill in the art could also use the teaching of adding whiskers by Ohta in the teaching of Takahar for reinforcement of the sintered metal filter.

***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Krishnan S. Menon whose telephone number is 571-272-1143. The examiner can normally be reached on 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wanda L. Walker can be reached on 571-272-1151. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Krishnan Menon  
Patent Examiner  
2/11/06

  
JOHN KIM  
Primary PATENT EXAMINER